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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,492	10/28/2003	Samantha S.H. Tan	59081-8010.US01	5759

22918 7590 10/04/2005

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EXAMINER	
KORNAKOV, MICHAIL	
ART UNIT	**PAPER NUMBER**
1746	

DATE MAILED: 10/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/696,492	TAN ET AL.	
	Examiner	Art Unit	
	Michael Kornakov	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 July 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,10-36,38-41,43-49,51-93,95-97 and 99-117* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,10-36,38-41,43-49,51-93,95-97 and 99-117* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 July 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *06/05 and 08/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 9, 37, 42, 50, 94, 98 and 109 are cancelled. Claims 116, 117 are new. Claims 1, 10, 11, 12, 32, , 43, 44, 93, 105, 115 are currently amended.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Double Patenting

3. **Provisional** ODP rejection of claims 1,2,32,37-39,73, 78,81,93,94,98-100,105,106,109 over claims 28,40 of copending Application No. 10/627,416. is maintained as per reasons stated in the first Office Action on the merits.

4. Objections to specification and claims are overcome by Applicants amendment, and are, therefore, withdrawn.

5. A lack of antecedency of specification to the claim language is overcome by Applicants' amendment of specification, and thus the objection to specification and 112, first paragraph rejection is withdrawn.

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 116 and 117 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application

was filed, had possession of the claimed invention. The limitations in claim 116 provide for "consisting essentially of" HCl in 5-50% by weight. The instant specification does not expressly or implicitly support the embodiment that excludes everything materially effecting the HCl composition and at the same time maintaining the concentration of HCl of at least 5% and not more than 50%. Thus, [0052] provides for 99% of HCl, [0053] provides for addition of different etching agents in significant amounts, [0051] and [0052] provide for etching solution of concentrated HCl, however, the solution does not prevent anything else to be present and 37% is a concentration of HCl per se, but not its relative weight in the solution.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

9. Claims 116 and 117 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 116 recites the weight of HCl of at least 5 to less than 50% by weight and at the same time uses the transitional phrase "consisting essentially of". Such transitional phrase assumes the presence only components that do not materially affect the claimed composition, however, if only 5-50% of HCl is present, it is most likely that 50-95% of other ingredients WILL materially affect the claimed cleaning composition. Correction and/or clarification is required.

10. Claims 1,30,31,93,98,103,104,105,109,114 and new claims 116, 117 are rejected under 35 U.S.C. 103(a) as being unpatentable over Datta et al (U.S. 5,152,878).

Datta teaches conventional method of cleaning a ***molybdenum mask***, having deposits of Cr, Cu, Au, Pb/Sn thereon, comprising treating the mask with a cleaning solution including HCl. Datta also teaches, that after cleaning the mask can be reused, therefore the step of removing the mask from the cleaning solution after a predetermined period of time is inherent in the teaching of Datta. Regarding the instant claim 30, Datta teaches that the mask is used for the deposition of metals on substrate, wherein the evaporized metal particles strike the substrate **through** the mask, therefore the mask, described by Datta inherently possesses a set of through holes (col.1, lines 30-38; col.2, lines 17-57; col.3, lines 22-56). Regarding the instant claims 103 and 114, see Table I of Datta. In Table 1 of col.3 Datta discloses the solution of 0.5 parts of HCl and 0.5% parts of HNO_3, (i.e.50% by weight of HCL) and 0.05 parts by weight of HCL, which is 5% of HCl. The difference between the newly amended claims and Datta is 5% of Datta vs. greater than 5% of the instant claims. However, "greater" is interpreted as the smallest possible difference, and therefore, when the claimed range and the prior art range are very similarly (i.e., less than 2 and 2) the range of the prior art establishes *prima facie* obviousness because one of ordinary skill in the art would have expected the similar ranges to have the same properties. *See in re Peterson,* 65 USPQ2d 1379, 1382, citing *titanium Metals Corp. V. Banner*, 227 USPQ 773, 779. Furthermore, the disclosure by the reference of a preferred embodiment does not teach away from the

entire disclosure of the patent, all of which must be considered in the analysis of obviousness. *See In re Burckel*, 201 USPQ 67, 70.

11. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Datta et al (U.S. 5,152,878).

Datta does not specifically indicate the period of time for of bigger samples cleaning. However, Datta teaches that removing metal residues on the mask by typical chemical cleaning may attack the molybdenum base of the mask and the extent of attack is a strong function of cleaning time (col.3, lines 55-56), thus indicating that cleaning time is a result effective parameter and motivating the skilled artisan to optimize the cleaning time. However, discovery of optimum value of result effective variable in known process is ordinarily within the skill in the art and would have been obvious, consult ***In re*** Boesch and Slaney 205 USPQ 215 (CCPA 1980).

12. Claims 2, 32,36,37, 40,41,42,43,44,45,46-50, 67-72, 94,106 are rejected under 35 U.S.C. 103(a) as being unpatentable over Datta et al (U.S. 5,152,878) in view of JP11-290805.

While teaching placing a molybdenum mask in a hydrochloric acid cleaning solution, Datta remains silent about agitating the cleaning solution. However, the agitating of solution during the metal mask cleaning is known in the art. Thus, JP'805 teaches ultrasonic agitating during the cleaning of metal mask. Therefore, one skilled in the art motivated by JP'805 would have found obvious to utilize ultrasonic agitation of cleaning solution in order to enhance molybdenum mask cleaning in the teaching of

Datta with the reasonable expectation of success. With regard to claim 40, while teaching oven drying of mask, Datta remains silent about the use of nitrogen. However, one skilled in the art would have found obvious to utilize nitrogen in order to prevent excessive oxidation of molybdenum mask during drying in the method of Datta/JP'805.

Regarding claim 32 Datta does not include the agitation of the cleaning liquid.

JP'805 teaches a method of cleaning a metal mask, which includes placing the mask in a cleaning solution and ultrasonically agitating the cleaning solution for a predetermined time [0007], [0008]. Therefore, it would have been obvious to those skilled in the art at the time the invention was made to agitate the immersion vessel of Datta to facilitate the contact of the sample to be cleaned with the cleaning liquid and thus to enhance the cleaning efficiency.

Regarding claims 46-50, the combined teaching of Datta/JP'805 does not specifically indicate the period of time for cleaning. However, Datta teaches that removing metal residues on the mask by typical chemical cleaning may attack the molybdenum base of the mask and the extent of attack is a strong function of cleaning time (col.3, lines 55-56 of Datta), thus indicating that cleaning time is a result effective parameter and motivating the skilled artisan to optimize the cleaning time. However, discovery of optimum value of result effective variable in known process is ordinarily within the skill in the art and would have been obvious, consult ***In re*** Boesch and Slaney 205 USPQ 215 (CCPA 1980).

Regarding claims 67-72, the combined teaching of Datta/JP'805 does not specifically indicate the temperature of the cleaning environment. However, the temperature of the

wet chemical cleaning is result effective parameter, because it affects the rate of the reaction and time required for chemical processing. However, discovery of optimum value of result effective variable in known process is ordinarily within the skill in the art and would have been obvious, consult ***In re*** Boesch and Slaney 205 USPQ 215 (CCPA 1980).

13. Claims 3-28, 33-35, 38-39, 51-66, 73-81, 95-97,99-102,107,108, 110-113,115 are rejected under 35 U.S.C. 103(a) as being unpatentable over Datta et al (U.S. 5,152,878) in view of JP11-290805 and in further view of Spring (Metal Cleaning, Reinhold Publishing Corporation, 1963. pages 83-89).

While utilizing the ultrasonic agitation, and providing for the cover of treatment tank, the combined teaching of Datta/JP'805 does not specifically indicate the particularities of processing equipment and the steps of handling the mask during the cleaning. It is noted here that the mask of Datta/JP'805is made of metal. Spring teaches conventional approach to handling metal parts during their cleaning, wherein metal parts are placed into a container and the container is placed into the processing solution, which is contained into the vessel, surrounded by liquid and placed into another vessel, having transducers placed along its outside surfaces (Spring, pages 88-89).

Because both Datta/JP'805 and Spring are concerned with ultrasonic cleaning of metal parts in aggressive solutions and Spring teaches the conventional approach to such cleaning, one skilled in the art motivated by teaching of Spring would have found obvious to put molybdenum mask in a container and place the container into a cleaning

solution, which is contained into a first vessel and provide a second vessel with aqueous solution surrounding the first vessel, as per teaching of Spring in order to create the optimum environment for propagating the ultrasonic waves into the cleaning solution and contacting the ultrasonically activated cleaning solution with molybdenum mask in the teaching of Datta/JP'805.

Regarding claims 4, 6 and the other claims reciting covering the respective containers, one skilled in the art would have found obvious to cover the container with the mask in order to fix the mask inside the container and provide safe handling of the container with the mask, an to cover the vessel with cleaning solution in order to prevent spreading the hazardous solution into the surrounding areas.

Regarding claim 7, one skilled in the art would have found obvious to utilize nitrogen in order to prevent excessive oxidation of molybdenum mask during drying in the method of Datta/JP'805/Spring.

While utilizing the ultrasonic agitation, the combined teaching of Datta/JP'805/Spring does not specifically indicate values of agitation frequency or agitation power, as per claims 17-28, 52-56 and claims 63. It is noticed here that these parameters are result effective, because they affect the agitation and the other physical conditions of cleaning liquid and therefore the effectiveness of cleaning

However, discovery of optimum values of result effective variables in known process is ordinarily within the skill in the art and would have been obvious, consult ***In re*** Boesch and Slaney 205 USPQ 215 (CCPA 1980).

Regarding claims 64-66, Spring teaches the use of containers, made of plastics and the other materials, resistive to corrosive environment of cleaning liquids. Therefore, one skilled in the art, motivated by Spring would have found obvious to utilize known acid corrosion resistive materials, such as Teflon or high density polyethylene for chemical containers, in the combined teaching of Datta/JP'805.

14. Claims 116 and 117 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cathey et al (U.S. 5,853,492). Cathey discloses a method for treating the molybdenum tip of emitter with a solution of hydrochloric acid, wherein HCl is diluted by water between 10:1 to about 50:1, in particular embodiment the ratio of water to acid is 20:1. (see col.3, lines 5-14). Cathey does not expressly state that the process is applied to a mask made of molybdenum, however, the molybdenum surface of Cathey, which is a tip of the emitter, cleaned by HCl provides the reasonable expectation of success in treatment of masks (films) made of the same material, and thus renders the instant claims 116, 117 obvious.

With regard to new claims 116, 117, in light of previous discussion of a new matter and ambiguity of claims 116 and 117, the claims is given the same interpretation that previously examined claims that the solution containing 5-50% of HCl is met by the last example in Table I of col.3.

Response to Arguments

15. Applicant's arguments filed 07/20/2005 have been fully considered but they are not persuasive. With regard to Datta reference, Applicants argument resides in

contention that Datta teaches the sequence of steps, while the instant claims call for a ***single*** step of HCl treatment. This is absolutely unpersuasive, because the transitional phrase of the instant claims with regard to method steps, i.e. "comprising", constitutes an open language and allows any additional steps.

The transitional term "comprising", which is synonymous with "including," "containing," or "characterized by," is inclusive or open-ended and does not exclude additional, unrecited elements or method steps. See, e.g., Genentech, Inc. v. Chiron Corp., 112 F.3d 495, 501, 42 USPQ2d 1608, 1613 (Fed. Cir. 1997) ("Comprising" is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim.); Moleculon Research Corp. v. CBS, Inc., 793 F.2d 1261, 229 USPQ 805 (Fed. Cir. 1986); In re Baxter, 656 F.2d 679, 686, 210 USPQ 795, 803 (CCPA 1981); Ex parte Davis, 80USPQ 448, 450 (Bd. App. 1948).

The next Applicant's argument is that Datta does not disclose the range of weight ratios of HCl as instantly claimed. However, on page 25 of the response, Applicants admit: "Additionally, Datta discloses using HCl in combinations ***of 5% HCl*** by weight and below and 50% HCl by weight and above. Therefore, Datta does not disclose the claimed range of at least 5% but less than 50% HCl by weight".

In response to this it is first noted that "at least 5%" include 5% and the concentration of 5% is expressly disclosed by Datta, which is admitted by Applicant. As stated in MPEP 2131.03 a specific example in the prior art which is within the claimed range anticipates the range. It has long been held that the disclosure in the prior art of any value within

the claimed range is an anticipation of claimed range, ***Ex parte Lee*** 31 USPQ 2d 1106, 1106. With regard to the limitation of claims "greater than 5%", the obviousness of such is discussed above.

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kornakov whose telephone number is (571) 272-1303. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M. KORNAKOV

Michael Kornakov
Primary Examiner
Art Unit 1746

09/30/05